Reply to Final Office Action of 05/30/2008
Amendment Dated: August 21, 2008

Appl. No.: 10/708,901
Attorney Docket No.: H0005782

Amendments to the Specification

Please replace the Abstract with the following amended version. A clean copy of the amended Abstract is provided on a separate sheet, as believed to be required by the applicable practice:

[0099] ~~Attorney Client PrivilegedCommunication Communication Honey-well Proprietary Draft: March 25, 2004 (5:12PM)Page of 21~~ An aspect of the present invention takes advantage of the information of expected time of availability of an unavailable component to meet a desired criteria (e.g., minimize the aggregate cost of components). An intermediate product properties combination, which can be attained from an initial heel volume by mixing the available components, may be determined. The combination further permits the target product properties also to be attained from the intermediate product properties combination, while meeting various constraints and desired criteria. The flow controls of the individual components are accordingly controlled to blend the components and produce the desired product. Such features may be useful in environments such as oil refineries.

Please replace paragraph [0030] with the following amended paragraphs:

[0030] 1. Overview

[0030.1] According to an aspect of the present invention, intermediate blend points with corresponding intermediate properties at or after the time instance at which an unavailable component is expected to be available, are computed. The intermediate blend points are computed such that the corresponding intermediate properties can be attained at the corresponding time instances, as well as the target properties can eventually be attained from the intermediate product properties (while satisfying various constraints) at the end of the blend operation. The intermediate blend points may be determined based on the manner in which each component affects each target (desired) property, a time instance at which the unavailable component is expected to be available, and an aggregate volume of the product to be produced. Various mathematical approaches can be used to determine the intermediate blend points.

Please replace paragraph [0032] with the following amended paragraphs:

[0032] 2. Example Environment

[0032.1] Figure 1 is a block diagram illustrating the details of an example environment in which various aspects of the present invention can be implemented. The environment is

assumed to represent an oil refinery merely for illustration. However, various aspects of the present invention can be used in other environments in which there is an overlap of properties (of a product sought to be produced) that are affected by the components in blending.¬¬ ¬

5   Please replace paragraph [0040] with the following amended paragraphs:

[0040]3. Example Requirements

[0040.1]Figure 2 includes a table illustrating the properties of a product sought to be produced. The table is shown containing three columns 201-203, with column 201 indicating the property that is subject of corresponding row 221-225, column 202 indicating a minimum

10   and a maximum value for each property of the blend during blend and column 203 indicating a minimum and a maximum value for each property of product at the end of the blend. The properties of the columns may correspond to some of those noted in the background section in the context of oil refineries. Each row is described below in further detail.

15   Please replace paragraph [0049] with the following amended paragraphs:

[0049]4. Method

[0049.1]Figure 5 is a flow chart illustrating the manner in which a product may be produced according to various aspects of the present invention. The method is described with reference to Figures 1-4 merely for illustration. However, the method can be implemented in other

20   environments as well. The method begins in step 501 and control immediately passes to step 510.

          Please replace paragraph [0056] with the following amended paragraphs:

[0056]5. Comparison With a Conventional Approach

[0056.1]Figure 6 is a graph illustrating the advantages offered by various aspects of the

25   present invention in comparison with a prior approach. The graph corresponds to one of the properties (Prop1) noted in the description above. Similarly, other properties also may be addressed in according to aspects of the present technique.

          Please replace paragraph [0061] with the following amended paragraphs:

30   [0061]6. Tables

[0061.1]Figure 7 contains a table illustrating a range of intermediate blend properties at time instance 650 (of Figure 6), which permit the target properties to be eventually achieved by time instance D (of Figure 6) while minimizing the overall cost of components. The range

may be determined using various mathematical models such as Linear Programming Model, as described in sections below. The specific intermediate blend property is determined taking into account the time duration after which the components are scheduled to become available or unavailable, starting quality of the product in the tank, constraints (property in the blend header, at the end of the blend, flow and volume), components qualities and the time duration that would be left after arrival of the component till the end of the blend. The intermediate values may be determined using techniques such as standard Mathematical models, which use Linear programming principles.

Please replace paragraph [0080] with the following amended paragraphs:

[0080]7. Determining Intermediate Product Properties

[0080.1]Figure 12 is a flow chart illustrating the manner in which the intermediate product properties (corresponding to point 650) may be determined according to an aspect of the present invention. The flowchart begins in step 1201, in which control immediately passes to step 1210.

Please replace paragraph [0092] with the following amended paragraphs:

[0092]8. Software-driven Implementation

[0092.1]Figure 13 is a block diagram illustrating the details of digital processing system 1300 implemented substantially in the form of software in an embodiment of the present invention. System 1300 may correspond to a portion of blend controller 110. System 1300 may contain one or more processors such as central processing unit (CPU) 1310, random access memory (RAM) 1320, secondary memory 1330, graphics controller 1360, display unit 1370, network interface 1380, and input interface 1390. All the components except display unit 1370 may communicate with each other over communication path 1350, which may contain several buses as is well known in the relevant arts. The components of Figure 13 are described below in further detail.

Please replace paragraph [0098] with the following amended paragraphs:

[0098]9. Conclusion

[0098.1]While various embodiments of the present invention have been described above, it should be understood that they have been presented by way of example only, and not limitation. Thus, the breadth and scope of the present invention should not be limited by any

of the above described exemplary embodiments, but should be defined only in accordance

with the following claims and their equivalents.

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